## Claims

1. (Original) A safety steering column system for a motor vehicle that can be selectively configured upon entry into the motor vehicle of a driver in the event of an accident to control the movement of at least a steering wheel end region of the steering column away from the driver of the vehicle correlated to a driver's configuring parameters comprising

(a) a steering column comprised of an upper and a lower telescoping parts with the upper part including the steering wheel end region, with the telescoping parts of the steering column being mounted for telescoping toward the front of the vehicle,

(b) an adjustment mechanism intercoupling the telescoping parts of the steering column,

(c) a first sensing device for sensing a physical parameter related to the size of the driver when the driver has entered the motor vehicle and providing a first configuring output,

(d) a second sensing device for sensing a seat belt parameter of whether the driver who is seated in the motor vehicle has a seat belt fastened and providing a second configuring output,

(e) the adjustment mechanism including

(i) a lockable load absorber,

(ii) a triggerable unlocking device associated with the load absorber that when triggered unlocks the load absorber, and

(iii) at least one triggerable operator that when triggered positively moves the telescoping parts of the steering column together away from the driver, and

(f) a controller for receiving the outputs from the sensing devices and responsive to the received outputs for configuring the adjustment mechanism, when the driver enters the motor vehicle and prior to any accident, by controlling the triggerable unlocking device and the triggerable operator so that the adjustment mechanism operates to operate according to one of at least three preselected different and distinct operations.

2. (Original) The safety steering column system according to claim 1, wherein the adjustment mechanism includes an energy generator for the operator.

3. (Original) The safety steering column system according to claim 2, wherein the energy generator is one of a pyrotechnic gas generator and an electrical device.

4. (Original) The safety steering column system according to claim 1, wherein a pair of lockable load absorbers are provided, capable of being operated individually or simultaneously.

5. (Original) The safety steering column system according to claim 4 wherein the load absorbers have different absorbencies.

6. (Original) The safety steering column system according to claim 1, wherein the load absorber includes a deformation member.

7. (Original) The safety steering column system according to claim 6, wherein the deformation member is comprised of one of a cutting knife, material deforming bolts, and a deceleration carriage having at least two deceleration force steps.

8. (Original) The safety steering column system according to claim 1, wherein sensors sense and provide outputs to the controller of the driver's seat position, seat belt fastened status, driver's size, and at least one of driver's weight and driver's posture.

9. (Original) The safety steering column system according to claim 1, wherein the controller triggers the operator in dependence on the driver's seat position.

10. (Original) The safety steering column system according to claim 1, wherein the controller is responsive to a sensed output that is indicative of a predetermined distance or less between the driver and the steering wheel to condition the adjustment mechanism to trigger in case of an accident.

11. (Original) The safety steering column system according to claim 1, wherein the controller conditions the load absorber responsive to the output of the sensor for one of the driver's seat belt fastening status and seat position.

12. (Original) The safety steering column system according to claim 1, wherein the controller conditions the adjustment mechanism in the case of an accident by unlocking the load absorber responsive to the driver not wearing the seat belt.

13. (Original) The safety steering column system according to claim 1, wherein the first sensing device includes one of an electrical switch and optical switch juxtaposed with respect to seat guiding rails.

14. (Original) The safety steering column system according to claim 1, wherein the second sensing device includes one of an electrical and optical buckle usage switch juxtaposed with respect to the seat belt buckle for the driver's seat belt.

15. (Original) A safety steering column system for a motor vehicle that can be selectively configured upon entry into the motor vehicle of a driver in the event of an accident to control the movement of at least a steering wheel end region of the steering column away from the driver of the vehicle correlated to a driver's configuring parameters comprising,

(a) a steering column comprised of an upper and a lower telescoping parts with the upper part including the steering wheel end region, with the telescoping parts of the steering column being mounted for telescoping toward the front of the vehicle,

(b) an adjustment mechanism intercoupling the telescoping parts of the steering column,

(c) a first sensing device for sensing a physical parameter related to the size of the driver when the driver has entered the motor vehicle and providing a first configuring output,

(d) a second sensing device for sensing a seat belt parameter of whether the driver who is seated in the motor vehicle has a seat belt fastened and providing a second configuring output,

(e) the adjustment mechanism including

(i) a pair of load absorbers having different load absorbency,

(ii) a lock associated with each load absorber,

(iii) a triggerable unlocking device associated with each lock that when triggered unlocks the associated lock, and

(iv) at least one operator including a triggerable device to generate energy for the operator so that when the device is triggered and energy is generated to drive the operator, the operator will positively move the telescoping parts of the steering column together away from the driver, and

(f) a controller for receiving the outputs from the sensing devices and responsive to the received outputs for configuring the adjustment mechanism, when the driver enters the motor vehicle and prior to any accident, by controlling the triggerable unlocking device and the triggerable operator so that the adjustment mechanism operates to operate according to one of at least three preselected different and distinct operations.

16. (Original) The safety steering column system according to claim 15, wherein the adjustment mechanism includes an energy generator for the operator.

17. (Original) The safety steering column system according to claim 16, wherein the energy generator is one of a pyrotechnic gas generator and an electrical device.

18. (Original) The safety steering column system according to claim 15, wherein the load absorbers include a deformation member.

19. (Original) The safety steering column system according to claim 18, wherein the deformation members are comprised of one of material deforming bolts, a deceleration carriage having at least two deceleration force steps and combinations thereof.

20. (Original) The safety steering column system according to claim 15, wherein sensors sense and provide outputs to the controller of the driver's seat position, seat belt fastened status, driver's size, and at least one of driver's weight and driver's posture.

21. (Original) The safety steering column system according to claim 15, wherein the controller triggers the operator in dependence on the driver's seat position.

22. (Original) The safety steering column system according to claim 15, wherein the controller is responsive to a sensed output that is indicative of a predetermined distance or less between the driver and the steering wheel to condition the adjustment mechanism to trigger in case of an accident.

23. (Original) The safety steering column system according to claim 15, wherein the controller conditions the load absorbers responsive to the output of the sensor for one of the driver's seat belt fastening status and seat position.

24. (Original) The safety steering column system according to claim 15, wherein the controller conditions the adjustment mechanism in the case of an accident by unlocking the load absorber responsive to the driver not wearing a seat belt.

25. (Original) The safety steering column system according to claim 15, wherein the first sensing device includes one of an electrical switch and optical switch juxtaposed with respect to seat guiding rails.

26. (Original) The safety steering column system according to claim 15, wherein the second sensing device includes one of an electrical and optical buckle usage switch juxtaposed with respect to the seat belt buckle for the driver's seat belt.

27. (Original) The safety steering column system according to claim 15, wherein the first sensing device senses one of weight and height of the driver.

28. (Original) A bolt mechanism located within a load absorber that can be selectively configured to positively trigger and make the bolt ineffective in the operation of the load absorber comprising,

(a) a bolt mechanism including,

(i) a metal rod or bolt housed within a load absorber,

(ii) a bolt lock associated with the metal rod or bolt,

(iii) a triggerable bolt unlocking device associated with the metal rod or bolt that when triggered unlocks the associated bolt lock, and

(iv) a bolt operator including a triggerable bolt device to generate energy for the bolt operator so that when the bolt device is triggered and energy is generated to drive the bolt operator, the bolt operator will positively move the metal rod or bolt,

(b) a first sensing device for sensing a physical parameter related to the size of the driver when the driver has entered the motor vehicle and providing a first configuring output,

(c) a second sensing device for sensing a seat belt parameter of whether the driver who is seated in the motor vehicle has a seat belt fastened and providing a second configuring output, and

(d) a controller for receiving the outputs from the sensing devices and responsive to the received outputs for configuring the bolt mechanism, when the driver enters the motor vehicle and prior to any accident, by controlling the triggerable unlocking bolt device and the triggerable bolt operator so that the bolt mechanism operates to operate according to one of at least two preselected different and distinct operations.

29. (Original) The bolt mechanism according to claim 28, wherein the bolt mechanism includes an energy generator for the bolt operator.

30. (Original) The bolt mechanism according to claim 29, wherein the energy generator is one of an electrical device.

31. (Original) The bolt mechanism according to claim 28, wherein sensors sense and provide outputs to the controller of the driver's seat position, seat belt fastened status, driver's size, and at least one of driver's weight and driver's posture.

32. (Original) The bolt mechanism according to claim 28, wherein the controller triggers the bolt operator in dependence on the driver's seat position.

33. (Original) The bolt mechanism according to claim 28, wherein the controller is responsive to a sensed output that is indicative of a predetermined distance or less between the driver and the steering wheel to condition the bolt mechanism to trigger in case of an accident.

34. (Original) The bolt mechanism according to claim 28, wherein the controller conditions the bolt mechanism in the case of an accident by unlocking the bolt lock responsive to the driver not wearing a seat belt.

35. (Original) The bolt mechanism according to claim 28, wherein the first sensing device includes one of an electrical switch and optical switch juxtaposed with respect to seat guiding rails.

36. (Original) The bolt mechanism system according to claim 28, wherein the second sensing device includes one of an electrical and optical buckle usage switch juxtaposed with respect to the seat belt buckle for the driver's seat belt.

37. (Original) The bolt mechanism according to claim 28, wherein the first sensing device senses one of weight and height of the driver.

38. (Previously presented) A safety telescopic steering column system for a motor vehicle in which an upper part of the telescopic steering column telescopes with respect to a lower part that is fixed relative to the vehicle comprising;

a detector that receives input correlated with parameters related to a driver of the vehicle;

a coupling interconnecting the telescoping parts of the steering column that can be arranged in a plurality of different operative configurations;

a controller responsive to the input to the detector to selectively pre-configure the coupling from among the different operative configurations upon a driver entering the vehicle and prior to an accident happening.

39. (Previously presented) A safety steering column system according to claim 38 wherein the coupling includes at least one lockable load absorber.

40. (Previously presented) A safety steering column system according to claim 39 wherein the coupling includes a plurality of lockable load absorbers.

41. (Previously presented) A safety steering column system according to claim 40 wherein the plurality of lockable load absorbers are tailored to several load absorber levels.

42. (Previously presented) A safety steering column system according to claim 38 wherein an ignitable pyrotechnic piston-cylinder is mounted in parallel to the coupling, and controlled by the controller to move the upper part of the telescopic steering column down.

43. (Previously presented) A safety steering column system according to claim 39 wherein the controller switches the at least one load absorber between locked and unlocked conditions.

44. (Previously presented) A safety steering column system according to claim 43 wherein electrically ignitable pyrotechnic fasteners are provided to enable switching between locked and unlocked conditions.

45. (Previously presented) A safety steering column system according to claim 39 wherein the controller switches the at least one load absorber in steps.

46. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber is composed of a sheet metal plate member provided with a tearing seam.

47. (Previously presented) A safety steering column system according to claim 40

wherein the plurality of lockable load absorbers are composed of bent plate of sheet metal members provided with tearing seams.

48. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber is fixed relative to the vehicle on one side and attached to the upper part of the steering column on its other side by at least one controllable releasable fastener.

49. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber is fixed relative to the vehicle on one side and attached to the upper part of the steering column on its other side by at least one pyrotechnic ignitable fastener.

50. (Previously presented) A safety steering column system according to claim 40 wherein the load absorbers are fixed relative to the vehicle on one side and attached to the upper part of the steering column on its other side by controllable releasable fasteners.

51. (Previously presented) A safety steering column system according to claim 50 wherein the controllable releasable fasteners are pyrotechnic ignitable fasteners ignitable by the controller.

52. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber is composed of at least one bent sheet of metal member adapted to be torn out to absorb force of a load.

53. (Previously presented) A safety steering column system according to claim 40 wherein the load absorbers are composed of a plurality of bent sheet of metal members adapted to be torn out to absorb force of a plurality of different loads.

54. (Previously presented) A safety steering column system according to claim 52 wherein the at least one bent sheet of metal member adapted to be torn out to absorb force of a load is composed of two sections, one section of which is fixed relative to the vehicle and the other section of which is provided with a slot, and a fastener slidably mounted in the slot attaching the other section to the upper part of the steering column to achieve a step load absorption.

55. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber comprises a metal surface coacting with a cutting tool to cut a predetermined chip from the metal surface to absorb force of a load.

56. (Previously presented) A safety steering column system according to claim 55 wherein the metal surface is a cylinder.

57. (Previously presented) A safety steering column system according to claim 55 wherein the load absorber includes a cam coacting with the cutting tool to achieve the predetermined chip.

58. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber includes a controllable releasable fastener for switching the load absorber between a locked condition in which it functions as a load absorber and unlocked condition in which the load absorber is inactive.

59. (Previously presented) A safety steering column system according to claim 58 wherein the load absorber includes a pyrotechnic controllable releasable fastener for switching the load absorber between the locked condition in which it functions as a load absorber and unlocked condition in which the load absorber is inactive.

60. (Previously presented) A safety steering column system according to claim 59 wherein the pyrotechnic controllable releasable fastener is one of a pyrotechnic controllable releasable rivet and pyrotechnic controllable releasable bolt.

61. (Previously presented) A safety steering column system according to claim 60 wherein an ignitable pyrotechnic piston-cylinder is mounted in parallel to the load absorber, and controlled by the controller to move the upper part of the telescopic steering column down.

62. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber comprises a deformable tube that deforms responsive to and while absorbing force of a load.

63. (Previously presented) A safety steering column system according to claim 39 wherein the tube is one of a corrugated tube and a folded back tube.

64. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber is connected on one side by a pyrotechnic controllable releasable fastener to supporting structure.

65. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber is connected on both sides by a pyrotechnic controllable releasable fastener to supporting structure.

66. (Previously presented) A safety steering column system according to claim 63 wherein an ignitable pyrotechnic piston-cylinder is mounted in parallel to the load absorber, and

controlled by the controller to move the upper part of the telescopic steering column down.

67. (Previously presented) A safety steering column system according to claim 63 wherein the load absorber includes an ignitable pyrotechnic piston-cylinder to move the upper part of the telescopic steering column down when the load absorber is unlocked.

68. (Previously presented) A safety steering column system according to claim 39 wherein the load absorber is mounted on a sled which is attached to the upper part of the steering column.

69. (Previously presented) A safety steering column system according to claim 56 wherein the load absorber includes an ignitable pyrotechnic piston-cylinder to move the upper part of the telescopic steering column down when the load absorber is unlocked.

70. (Previously presented) A safety steering column system according to claim 68 wherein an ignitable pyrotechnic piston-cylinder is mounted on the sled to move the upper part of the telescopic steering column down when the load absorber is unlocked.

71. (Previously presented) A safety steering column system according to claim 39 wherein a power unit is mounted in parallel to the coupling, and controlled by the controller to move the upper part of the telescopic steering column down.

72. (Previously presented) A safety steering column system according to claim 71 wherein the power unit includes a mechanism to prevent reversal.

73. (Previously presented) A safety steering column system according to claim 39 wherein the power unit is an ignitable pyrotechnic piston-cylinder.

74. (Previously presented) A safety steering column system according to claim 39 wherein the ignitable pyrotechnic piston-cylinder includes a reverse stopping mechanism.

75. (Previously presented) A safety steering column system according to claim 39 wherein the reverse stopping mechanism includes balls contained in an axially diminishing race.

76. (Previously presented) A method of operating a safety steering column system comprising the steps of:

a. providing a safety telescopic steering column system for a motor vehicle in which an upper part of the telescopic steering column telescopes with respect to a lower part that is fixed relative to the vehicle;

b. detecting input correlated with parameters related to a driver of the vehicle;

c. interconnecting the telescoping parts of the steering column in a way that provides a plurality of different operative configurations;

d. controlling the selection of a configurations of the coupling from among the different operative configurations responsive to the detected input upon a driver entering the vehicle and prior to the happening of an accident.

77. (Previously presented) A method of operating a safety steering column system according to claim 76 wherein the interconnecting step includes load absorption, and the further step of conditioning the load absorption for active or inactive operation.

78. (Previously presented) A method of operating a safety steering column system according to claim 77 including the further step of moving the upper part of the telescopic steering column down responsive to an accident and inactivation of all load absorption.

79. (Previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption occurs at different load levels.

80. (Previously presented) A method of operating a safety steering column system according to claim 77 including the step of controlling switching between active and inactive operation of the load absorption by a pyrotechnic generation of force.

81. (Previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption is achieved by a tearing of metal.

82. (Previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption is achieved by a cutting of metal.

83. (Previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption is achieved by a deforming of metal.

84. (Previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption is rendered active by a locking action.

85. (Previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption is rendered inactive by an unlocking action.

86. (Previously presented) A method of operating a safety steering column system according to claim 78 including the further step of reverse stopping the upper part of the telescopic steering column after having moved down.